representatives of all nine serological types with completely negative results. In addition her serum was tested against a suspension of the original strain which had been allowed to spore very freely, but no reaction could be detected either by agglutination or by complement-fixation technique.

Discussion

Comparatively early in the study of the bacteriology of tetanus it was realized that the spores of the bacillus had very great powers of resistance. Thus von Eiselsberg (1888) reported that a splinter of wood which had caused tetanus in a boy was capable of infecting rabbits two years later, and Henrijean (1891) recorded similar results after an interval of eleven years. As regards survival within the animal body opinion was much more guarded. It is true that Vaillard and Rouget (1892), Tarozzi (1906), and others had shown experimentally that spores might lie dormant in the tissues for several months, yet this was generally looked upon as quite exceptional, and it was not until the war, and after, that a number of cases of tetanus were recorded in which the primary infection had occurred months or even years previously.

The longest latent period about which there can be little doubt is in the case reported by Ernst (1931) in which tetanus developed fourteen years after the original war injury, but intervals of seven years (Brunzel, 1929) and four and a half years (Kaposi, 1917) are also on record. None of these cases, however, are comparable with our case, for in all of them the symptoms of tetanus developed first and then a possible source of previous infection was sought. For instance, in Ernst's case a wad had remained embedded in the tissues of the hand for fourteen years but without any symptoms. The patient then accidentally crushed his hand, but without breaking the skin, and developed tetanus, the spores of the organism presumably having lain dormant in the wad.

In post-operative "catgut" tetanus examination of the remainder of the ligature material used and of the discharge from the operation area has often failed to show *Cl. tetani*, and it has been suggested that the condition is not true tetanus, but in the case we now publish the findings show that it certainly was. They also show how important it is, even after the lapse of many years, to take anti-tetanic precautions when operating on a patient who has previously had tetanus.

We are indebted to Sir Frederick Menzies, Chief Medical Officer, London County Council, for permission to publish the record of the case from Hammersmith Hospital.

REFERENCES

Brunzel (1929). Quoted by A. Buzello, *Der Wundstarrkrampf beim Menschen.*
Condrea, P., *et al.* (1937). *C. R. Soc. Biol.*, Paris, **125**, 768.
Eiselsberg, A. von (1888). *Wien. klin. Wschr.*, **1**, 232, 259, 274, 289.
Ernst, W. (1931). *Arch. Hyg.*, **106**, 235.
Fildes, P. (1925). *Brit. J. exp. Path.*, **6**, 62.
Gunnison, J. B. (1937). *J. Immunol.*, **32**, 63.
Henrijean, F. (1891). *Ann. Soc. méd.-chir. Liége*, **30**, 367.
Kaposi, H. (1917). *Wien. klin. Wschr.*, **30**, 237.
Tarozzi, G. (1906). *Zbl. Bakt.*, Abt. 1, Orig., **40**, 305, 451.
Ten Broeck, C., and Bauer, J. H. (1923). *J. exp. Med.*, **37**, 479.
Tulloch, W. J. (1917). *J. R.A.M.C.*, **29**, 631.
Vaillard, L., and Rouget, J. (1892). *Ann. Inst. Pasteur*, **6**, 385.

Dr. Wu Lien Teh, for thirty years in the health and medical services of the Chinese Government and for fifteen years editor of the *National Medical Journal*, now the *Chinese Medical Journal*, has recently retired to his home in Penang. He was founder of the Chinese National Medical Association in 1914.

THE RISING INCIDENCE OF PSYCHOSOMATIC ILLNESS

BY

JAMES L. HALLIDAY, M.D., D.P.H.

Regional Medical Officer, Department of Health for Scotland

The increase in incapacitating sickness, its maintenance at a high level, and the growth of chronic invalidism among insured persons have puzzled many commentators, both lay and medical. Recent inquiries by the Regional Medical Staff of the Department of Health for Scotland have shown that the mass of chronic incapacity in that country may be regarded as "genuine" (McKinlay, 1937). In a previous study (1935) of the incidence of psychoneurotic illness I wrote: "It is interesting to speculate how far the rise in the rate of incapacity among insured persons during the last ten years has been due to an increased prevalence of psychoneurotic disability." The present paper—an analysis of morbidity statistics—shows that in the light of modern knowledge the only possible interpretation of the maintenance of the present high sickness rates is an increase in psychoneurotic and psychosomatic illness.

Note on the Term "Psychosomatic Illness."—The words "psychoneurotic illness" suggest, *inter alia*, the absence of structural change. Recent researches, however, have shown that emotional reaction may bring about changes not only in function but also in structure (Dunbar, 1935). A more appropriate term for disorders of this nature—whether (to use medical jargon) they are "cases of functional disease" or "cases of organic disease"—is "psychosomatic illness." This term is cumbrous but useful. It connotes both an aetiology and a mechanism. As regards aetiology, it indicates that the external agents which provoked the reaction of illness were of a special kind, being neither physical nor chemical nor micro-organic, but psychological—as, for example, the loss of a beloved object. As regards mechanism, it indicates that the external agent is encountered by the individual, not directly by the outer or inner surfaces of the body, such as the skin or mucous membranes, but indirectly, via the special senses and the integrating mechanism of the diencephalon, autonomic nervous system, and endocrine glands. This triad is sometimes called the psycho-neuro-endocrine system or the "bodily mechanism of emotion." By its means psychological factors may affect an individual profoundly, bringing about changes in chemistry, rhythm, secretion, and even structure in one or more parts of the body. In other words, bodily disturbances may be the secondaries of preceding disturbances in the integrating psycho-neuro-endocrine system, which in turn was set into a turmoil when the individual encountered events which, to him, represented deprivation, frustration, upset, strain, or difficulty.

Knowledge of Psychosomatic Disorders of Statistical Relevance

1. THE LABELS

The presence of psychosomatic illness in a community is not revealed directly in its morbidity statistics, but lies concealed under a number of labels which, with the exception of such terms as neurasthenia, nervous debility, and neurosis, have a reference to localized or mechanistic faults only. A knowledge of the considerable latent content of psychoneurotic and psychosomatic illness in certain common "diagnostic labels" has now become available as a result of recent researches. Some of these which are relevant are indicated below, but the reader is referred to the original papers for an adequate presentation of the problem.

(*a*) *Gastritis, Rheumatism, Anaemia, Debility, Heart Disease.*—Of 335 unselected insured patients suffering from psychoneurotic illness (mainly anxiety states) the certificated cause of incapacity in approximately one-half (170) was one or other of those labels. The proportion of psychoneurotic illness for each label was as follows: gastritis, 70 per cent.;

rheumatism, 40 per cent.; anaemia, 40 per cent.; debility, 60 per cent.; heart disease, 14 per cent. (Halliday, 1935).

(*b*) *Peptic Ulcer.*—Of 205 unselected patients with peptic ulcer (both gastric and duodenal), in 84 per cent. the symptoms of ulcer first emerged at a time of emotional reaction in response to psychological factors associated chiefly with occupation, finance, and family health. The mechanism involved was considered to be the psycho-neuro-endocrine system. The authors concluded that the crux of treatment was to free the patient from his anxiety, and if this could be achieved they believed that the patient's dyspepsia would trouble him no more (Davies and Wilson, 1937).

(*c*) *Chronic Rheumatism.*—Among insured persons the various terms which indicate "non-arthritic rheumatism" frequently cover anxiety states or hysteria with or without the presence of "rheumatoid" swellings of joints (Halliday, 1937, 1938). The need for considering psychological factors for an understanding of aetiology and as a guide to scientific treatment of clinically defined rheumatoid arthritis and osteo-arthritis has been demonstrated by American observers, such as Jelliffe and White (1935, 1936), Nissen (1936), and Booth (1937).

(*d*) *Chronic Bronchitis.*—"It is little known to practitioners that there exist purely psychogenic forms of bronchitis" (Stekel, 1923). This author summarizes many examples. No systematic investigation of the relation of psychological factors to the primary onset and recurrences of chronic bronchitis appears to have been made. Among insured persons I have noted that male patients with chronic bronchitis who are enmeshed in a "pension situation" for this disability are often better understood when regarded as examples of anxiety hysteria with secretory neurosis of the bronchi. I have also noted that persons may work for years in a dusty atmosphere but only become ill with bronchitis on encountering psychological factors and reacting with emotion. This also applies to many persons whose occupation in no way involves fumes, gas, or dust. Another interesting point is the not uncommon alternation of bronchitis and rheumatism in the same patient—that is to say, when the bronchitis is troublesome the rheumatism is quiescent; when the rheumatism is troublesome the bronchitis is quiescent. A similar alternation of peptic ulcer and rheumatism is not uncommon. A number of authors—for example, McDowall (1934)—have noted how patients with chronic bronchitis may be cured by psychotherapy, and in my own limited therapeutic experience I have seen some interesting improvements after the patient has "coughed it up" or "got it off his chest." The application of the psychological approach to chronic bronchitis is a virgin field for research. There is evidence, however, that recurring or chronic bronchitis is sometimes a localized manifestation of psychosomatic disorder, but in what proportion of the patients thus labelled we do not yet know.

This section is not intended in any way to suggest that "every person with rheumatism, bronchitis, gastritis, etc., is a case of psychoneurosis." Its purpose is to indicate that a proportion of patients whose illness is certified to be "caused" by certain common labels of disease are suffering from disorders which are psychosomatic in origin and nature. This applies not only to labels which are often used in a vague sense—for example, anaemia—but also to labels correctly applied—peptic ulcer, bronchitis, fibrositis, etc.

2. THE AGE INCIDENCE

Statistics of age and sex incidence are few and incomplete, but all available evidence points to the age incidence of primary onset of the symptoms being highest in the younger age groups or in early middle life. The following examples may be quoted:

In my inquiry of 1935 the incidence of psychoneurotic disability among the patients examined was the same for each sex. As regards age, the incidence (for the combined sexes) was highest in the youngest age groups. Thus the incidence in the age groups 16–34 was 33 per cent.; in the age group 35–54, 42 per cent.; but in the age group 55–65 it was only 14 per cent.

Bruce Pearson (1938), in an analysis of 950 unselected outpatients at a general hospital, found that the incidence of psychoneurotic illness among the patients examined was highest in females. As regards age (for the sexes combined), the incidence in the age group under 29 was 22 per cent.; in the age group 30–49, 19 per cent.; and in the age group over 50 only 5.5 per cent.

In their series of 205 patients with peptic ulcer Davies and Wilson (1937) found that the age distribution of onset for the sexes combined was as follows: under 35 years, 60 per cent.; 35–55 years, 33 per cent.; over 55 years, 7 per cent.

In a series (unpublished) of 134 consecutive referred insured persons certified to be incapacitated because of terms indicative of rheumatism, the age incidence of psychosomatic rheumatism in the age group under 35 was 45.8 per cent.; in the age group under 55, 41.8 per cent.; and in the age group over 55 only 14.3 per cent.

In a series of 450 patients with rheumatoid arthritis Glover (1928) compiled a table which shows that for males the age distribution of onset is highest in the group 30–40 years, and for the females in the group 20–30 years.

It is perhaps of interest to note that these age distributions are comparable to those found for the onset of asthma in adults (Bray, 1934) and for nystagmus in miners (M.R.C. Report, 1922).

3. DURATION IN RELATION TO RECOGNITION AND TREATMENT

If the need for supplementing the ordinary examination of the teaching schools with an investigation into psychological factors is not understood, the range of clinical observations is too narrow and adequate remedial measures appropriate to each individual cannot be taken. In such circumstances the doctor has regard only for the "secondaries," and treatment is confined to standardized mechanistic and local interference. However, in so far as this action ignores primary causes it may be ineffective in preventing recurrence and in cutting short incapacity. Further, because of the features of innocence and increased suggestibility which are present in all patients with psychosomatic disorder, routine continuation of mechanistic treatment may succeed in fixing the symptoms for life. (Examples of such procedures are perennial alkaline powders for peptic ulcer, course upon course of physiotherapy for rheumatism, or successive nasal operations for bronchitis.) The risk of fixation is increased whenever treatment becomes very intensive, very elaborate, or very impersonal, and to-day, when ever-growing facilities are available for mechanistic diagnosis and therapy, there is a danger, if relevant considerations are omitted, of inducing "fixation invalidism" on a scale hitherto unknown.

The Indices of an Upward Trend in Psychosomatic Illness

From the information surveyed in the previous section it would be reasonable to infer an upward trend in psychosomatic illness (relative to illness with aetiology dependent on other environmental factors) if, over a period of years, morbidity statistics showed changes in three respects, namely:

1. An increase in the average duration of "incapacities."

Note.—Increasing facilities for intensive mechanistic treatment provide only one of the many factors which may contribute to the prolongation of sickness.

2. An increase in the certificated causes known to cover psychosomatic illness.

3. These increases would be most marked in the younger age groups.

The Application to Morbidity Statistics

Note.—Statistics of morbidity are not common. In Scotland, since 1930, the Department of Health has issued Annual Reports on Incapacitating Sickness in the Insured Population. These statistics deal mainly with the incapacitating illnesses which begin and end within each annual period under review. A valuable survey of these statistics was recently made by McKinlay (1937), who, from the standpoint of a statistician, sums them up as follows:

> "The major problems, from the point of numbers, seem to be at least six: (1) droplet infections (including influenza); (2) accidents and sepsis of the skin; (3) rheumatism, especially in its chronic forms; (4) gastric upsets of various kinds; (5) chronic respiratory diseases (bronchitis); and (6) those ill-defined states of ill-health

which constitute the bulk of cases labelled debility, neurasthenia, D.A.H. and tachycardia, and, perhaps in less degree, anaemia."

He adds that the divergence of these illnesses from those found in statistics of mortality is "very striking."

1. INCREASING AVERAGE DURATION OF INCAPACITY

The most significant feature of sickness among insured persons has been its rise over the past twenty years. For example, in England and Wales the rate of sickness during the years 1921 to 1926 rose by nearly 50 per cent., and that of disablement by nearly 80 per cent. These have since continued at a high level. Turning to the more detailed data available for Scotland since 1930, we find (Report No. 6, 1937) that, although there has been no definite increase in the *incidence* of "incapacities" (only 2.3 per cent.), there has been a very definite increase in their *average duration* (about 11 per cent.). Moreover, during these years the number of "chronic" patients (that is, those who were on the sick list continuously throughout the annual period) increased by one-third. Indeed, of the nineteen million "days of incapacity" in 1935–6, more than half (eleven million days) is attributable to a sickness of a year or more duration.

2. THE RISE MOST MARKED IN CERTIFICATED CAUSES WHICH COVER PSYCHOSOMATIC REACTION

The table illustrates the growth of chronic incapacitating sickness between the annual periods 1931–2 and 1935–6. In Column A are shown the principal certificated causes of chronic illness arranged in order of relative increase. Those specified account for 86 per cent. of the patients on the chronic register. By placing a tick opposite the terms which cover psychosomatic illness we find nine of the fourteen certificated causes specified in Column A to be "our old friends."

Table showing Chronic Incapacity in Scotland (1931–2 to 1935–6)

A	B				C	D
Certificated "Cause"	Percentage Increase (1931–2 to 1935–6) of Patients at Various Age Groups				Register (1936) Percentage Constitution	Order of Absolute Rise (1931–6)
	All Ages	16–34	35–54	55–65		
Peptic ulcer	130–140	126	168	92	1.9	7
Gastritis	110–120	121	189	65	1.9	8
Nervous debility	90–100	154	96	58	2.0	9
Bronchitis	70–80	166	136	31	7.9	4
Anaemia	„	90	79	59	1.3	12
Rheumatism	50–60	85	90	31	12.6	1
Cardiac debility	„	95	112	54	1.4	13
Diseases of the circulation	„	78	88	35	11.4	2
Other diseases of the respiratory system	„	76	78	35	3.9	6
Neurasthenia	30–40	74	46	12	3.5	10
Injuries	„	51	37	28	3.4	11
Insanity	20–30	60	31	1	21.2	3
Tuberculosis	„	42	18	2	11.2	5
Cerebral haemorrhage	„	84	61	5	2.4	14
					86.0	

Note.—In 1930 certain details about insured persons in Scotland who became ill and unfit for work began to be collected and analysed. (See Reports on Incapacitating Sickness in the Insured Population of Scotland, 1931–7.) A special register was devoted to those persons who had been on the sick-list continuously for more than twelve months. The table is compiled from this "Chronic Register," and is adapted from data provided in Report No. 6, pages 39 to 52. Column A shows the fourteen certificated "causes" of incapacity which provided the greatest increase in the number of patients between 1931 and 1936. Column B shows the percentage rise in respect of each cause at various age groups. Column C shows the percentage constitution of the "Chronic Register" in 1936 and indicates that those fourteen "causes" provided 86 per cent. of the total register. Column D indicates the order of absolute increase in the number of persons allotted to each of the certificated causes; for example, against rheumatism, which provided the highest increase—namely, 1,500 persons—is placed the number 1, whereas against cerebral haemorrhage, which provided an increase of only 170 persons, is placed the number 14.

3. THE RISE IN THE YOUNGER AGE GROUPS

Column B shows the percentage increase in the certificated causes at various age groups. The highest rate of increase for all ages is shown by peptic ulcer and gastritis. Next in order of rate of increase are nervous debility, bronchitis, anaemia, rheumatism, and cardiac debility. If we underline the age group which shows the maximum rise in each certificated cause, we find in age group 16–34 the highest rise was in respect of nervous debility, bronchitis, anaemia, and neurasthenia; whereas for age group 35–54 the highest rise was in respect of peptic ulcer, gastritis, rheumatism, cardiac debility, and diseases of the circulation. In no instance was the percentage increase greatest in the oldest age group. The finding that the increase in such illnesses as rheumatism and bronchitis is *not* in the older age group will surprise only those who have not appreciated the influence of psychological factors as a cause of illness.

Note.—"Chronic illness is still relatively more frequent in the old than in the young, and the tendency towards an increasing proportion of older people in the population would tend, other things being equal, towards an increase in chronic sickness; but within the ages under consideration this factor offers at best only a small part of the explanation" (McKinlay, 1937).

The table contains many other points of interest. For example, one-fifth of all chronic illness is due to insanity, and the rise in this during the last five years is most marked in the youngest age group. Again, rheumatism (see Column D) shows the greatest absolute increase in the number of patients. Also, the rise of cerebral haemorrhage in the younger age groups is an interesting phenomenon.

Findings from the Analysis

On analysis of chronic sickness returns during recent years we find the three indices which in combination reveal an upward trend in psychosomatic illness—namely, (1) increasing duration of incapacity; (2) increase in the labels known to cover a significant proportion of psychosomatic illness; and (3) the younger age groups most affected. It is therefore reasonable to conclude that psychosomatic illness is becoming more prevalent and that the maintenance of the high rates of morbidity at present existing in the community can only so be understood. No other interpretation covers all the known facts.

Note.—It is misleading, and even erroneous, to regard illnesses of this nature as "nervous diseases." It is more appropriate to describe them, when we are thinking or speaking in terms of mechanism, as "diseases of the psycho-neuro-endocrine system." Certain writers, however, would describe them as illnesses of the spirit or sicknesses of the soul. In any case, to state that "nervous diseases are increasing" misses the whole point of the phenomenon.

Discussion

(*a*) A high level of incapacitating sickness dependent on psychoneurotic and psychosomatic disorders is not incompatible with concomitant happenings such as a falling death rate, increasing height and weight of school children, and the abeyance of major epidemics. These occurrences—the usually accepted indices of improvement in the public health—have been achieved by action directed mainly towards the noxious physical, chemical, and micro-organic factors of environment. Psychosomatic illness, on the other hand, may be regarded as a response to noxious psychological factors of environment. The potency and practical implications of these, however, have hitherto received little systematic attention in so far as they affect the health of the community as a whole, and, as a result, psychosomatic illness progresses

without check and even with unwitting encouragement. A discussion of the "causes" of a high incidence of psychosomatic illness does not, however, enter into the scope of this paper, the aim of which is to point out the phenomenon and to indicate that it is a matter which concerns all medical men.

(*b*) A few remarks may be devoted to the problem of preventing incapacity once this type of reaction has occurred. To avoid confusion, it may be said at once that only a minority of these patients require specialist psychotherapeutic treatment. The great majority can be handled, as they are to-day, by the practitioner—but with a difference. The first requirement is the recognition that there is a problem. The second is an alteration in thought—an appreciation that illness is a reaction to environment in all its aspects, including the psychological. In other words, curative medicine can no longer be contented as at present with the academic question, "What has the patient got?"—because the answers to this question—no matter how accurate and detailed—may in isolation be irrelevant as a proper guide to scientific and effective action. A guidance which is often more valid and pertinent may be obtained by posing the natural questions of biology—for example, "Why did he take ill when he did?"; "What is he behaving like this for?" To know what a patient has *met*, or feels he *may meet*, is often of more practical value than to know what a patient has *got*. The third requirement is an alteration in action—namely, the inclusion in practice of what may be called the modern supplement to medical examination, especially when the patient first consults the doctor. In the absence of this, much incapacity preventable at the beginning becomes prolonged and permanent. I have noted that practitioners who examine their patients in this more adequate way do not tend to produce invalids in their practice, whereas those who are unaware of it, or who neglect it, tend to induce or even create incapacity. This observation, which refers to civilian practice, may be collated with the observations of others which refer to service practice during the great war. For example, "At all times the most important single influence determining the ratio of war neurosis was that of the regimental medical officer" (Mapother, 1936). And again, "Correct handling of patients in the early stage is likely to make all the difference between rapid recovery and chronic invalidism. The first link in the chain is the unit medical officer. He alone has the power to supply relevant information concerning the causes of breakdown in each case. He should have sufficient psychological knowledge to make an early diagnosis" (Burton, 1936).

(*c*) Certain of my medical friends have suggested that if this interpretation of the facts be true, it is a grave reflection on the medical profession. Actually, however, there is no reflection, and morals are not concerned. Neither is there any criticism. Historical observation has shown that the slow percolation of a new scientific outlook is a natural and predictable happening. Instead of studying the data and the inferences made from them with attention and clear-headed thinking, people respond with emotion, the reactions being characterized on the one hand by intense enthusiasm and on the other hand by indifference (the "blind spot") or even open resentment. When we react emotionally we exhibit the feature of increased suggestibility. Thus, if we become emotionally excited about any theory, our perception and judgment become distorted—we see what we want to see and infer what we want to infer. On the other hand, if we resent the introduction of a new technique into medicine (as our grandfathers resented the bacteriological and some doctors of to-day resent the psychological), our emotional state prevents us from seeing what we do not want to see and inferring what we do not want to infer.

"The influence of emotion on reasoning is considerable when the question is one affecting either the interests of an individual or some theory deeply rooted in his prejudices. Darwin recounts that one of his geological friends tried to assure him, against all evidence, that a certain fossil was not found in a given locality, for otherwise his argument (the geologist's) on the geology of the neighbourhood would be wrong; *four of his volumes would go for nothing.* This incident made a great impression on Darwin's mind. It showed him that the pursuit of truth demanded qualities of courage and will, not less than those of the intellect." (Quoted from Lynch, 1912.)

However, the reluctance of the profession to adopt a psychological outlook cannot be dissociated from the growth of unorthodox cults which continue to flourish and impress in fields where orthodox medicine often fails. Moreover, within the medical profession itself, lack of instruction in how to think about illness in an adequate way is responsible for many "good men going wrong" when, discouraged by their failure to get permanent results by standardized mechanistic methods, they begin to adopt freakish methods of treatment which have no real scientific foundation. It is true that they may obtain "results," but to the detached observer their successes are very obviously a function of their personality on the one hand or of the magical aspects of their treatment on the other.

(*d*) Lastly, it is interesting to speculate whether, *ceteris paribus*, a still further extension of mechanistic forms of treatment provided to all comers in the absence of a "threshold" examination which includes the modern supplement will result in a still further increase in the *duration* of invalidism. Time and the yard-stick of morbidity statistics will show. As McKinlay neatly puts it: "The efficiency of a service must ultimately be judged by the standard of health of the people rather than by the nature and amount of the facilities available for its preservation."

Conclusions

1. An analysis of Scottish morbidity statistics in the light of modern knowledge reveals a rising incidence of psychoneurotic and psychosomatic illness.

2. The extent and significance of this phenomenon are not yet generally realized, but it has definite bearings on the public health as well as on the future of medicine—in outlook, training, research, treatment, and prevention.

For assistance in the presentation of this study I am indebted to my colleague Dr. P. L. McKinlay, Medical Statistician to the Department of Health for Scotland.

REFERENCES

Booth, G. C. (1937). *J. nerv. ment. Dis.*, **85**, 637.
Bray, G. W. (1934). *Recent Advances in Allergy*, 2nd ed., p. 193, J. and A. Churchill, London.
Burton, H. L. (1936). *Proc. roy. Soc. Med.*, **29**, 865.
Davies, D. T., and Wilson, A. T. M. (1937). *Lancet*, **2**, 1353.
Dunbar, H. F. (1935). *Emotion and Bodily Changes*, Columbia University Press, New York.
Glover, J. A. (1928). Ministry of Health Report on Chronic Arthritis, No. 52, p. 17, London.
Halliday, J. L. (1935). *British Medical Journal (Supplement)*, **1**, 85, 99.
—— (1937). *British Medical Journal*, **1**, 213, 264.
—— (1938). *Proc. roy. Soc. Med.*, **31**, No. 1, 167.
Jelliffe, S. E., and White, W. A. (1935). *Diseases of the Nervous System*, 6th ed., p. 245, Philadelphia.
—— (1936). *Amer. J. Psychiat.*, **92**, 1051.
Lynch, A. H. (1912). *Psychology*, **1**, p. 363, Stephen, Swift and Co., London.
McDowall, R. J. S. (1934). *Science of Signs and Symptoms*, 3rd ed., p. 250, Heinemann, London.
McKinlay P. L. (1937). *J. roy. san. Inst.*, **58**, 374.
Mapother, E. (1936). *Proc. roy. Soc. Med.*, **29**, 858.
Medical Research Council Report of the Miners' Nystagmus Committee (1922), No. 65, **1**, 52, London.
Nissen, H. A. (1936). *New Eng. J. Med.*, **214**, 576.
Pearson, R. S. Bruce (1938). *Lancet*, **1**, 451.
Report on Incapacitating Sickness in Scotland, No. 6 (1937), Edinburgh.
Stekel, W. (1923). *Conditions of Nervous Anxiety and their Treatment*, p. 56, Kegan Paul, London.